

No. 857,123.

PATENTED JUNE 18, 1907.

A. R. TIFFANY.

PRESS FOR FORMING INTERNAL GROOVES IN PAPER VESSELS.

APPLICATION FILED APR. 28, 1905.

3 SHEETS—SHEET 1.

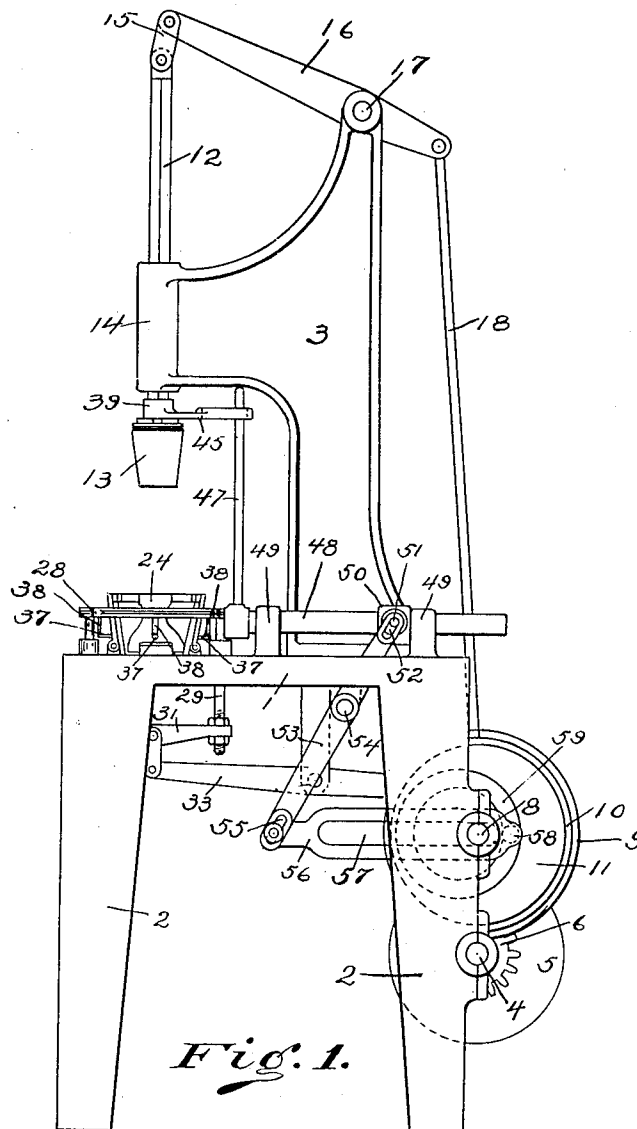


Fig. 1.

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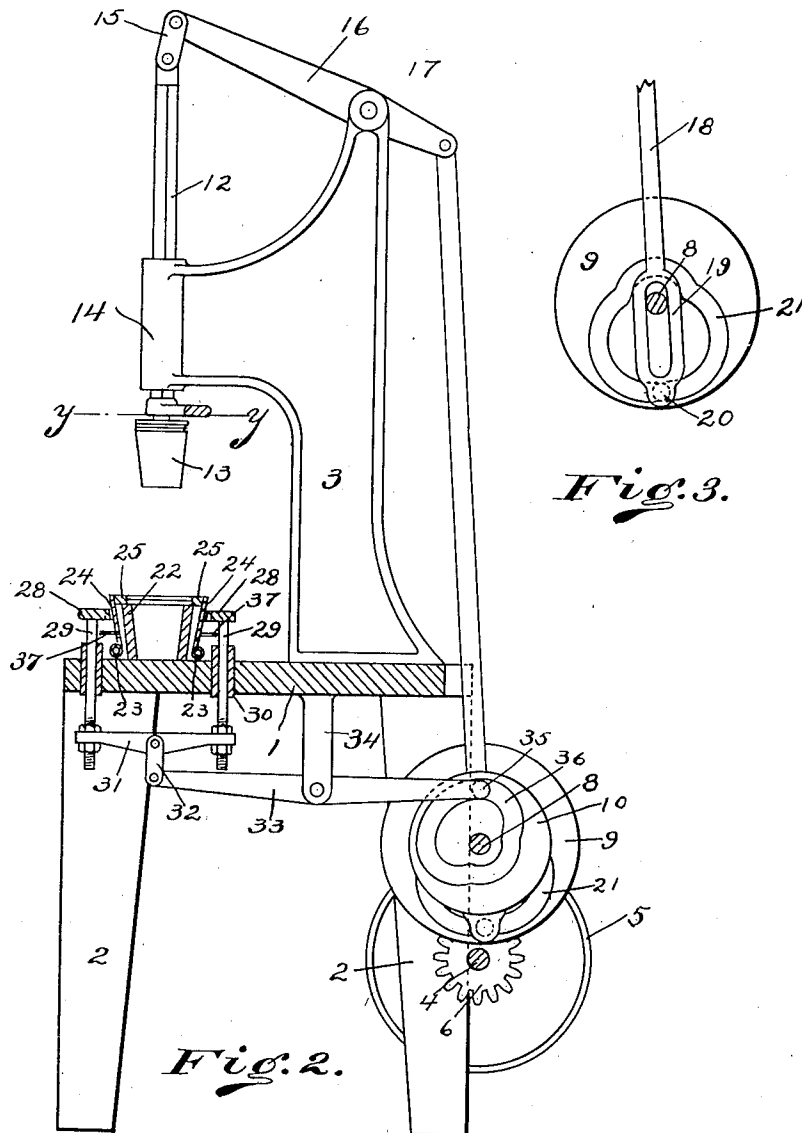
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3 SHEETS—SHEET 2.



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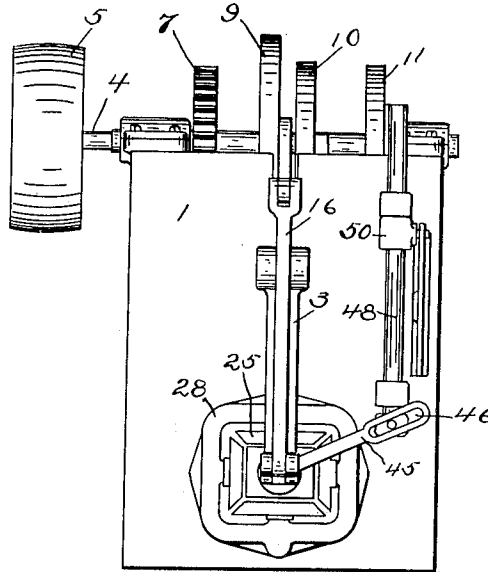


Fig. 4.

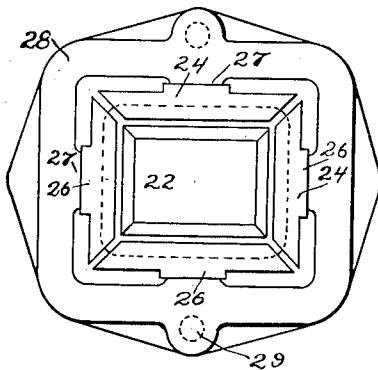


Fig. 5.

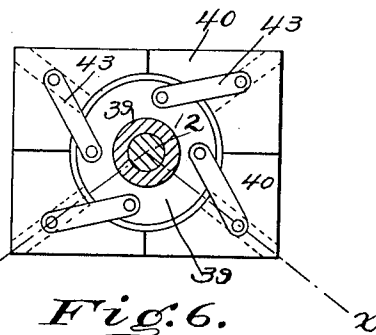


Fig. 6.

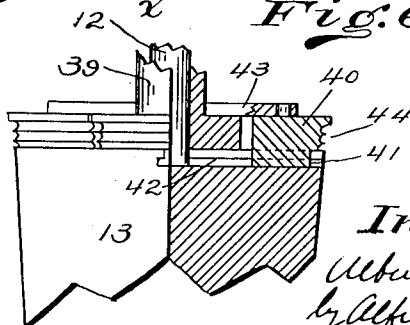


Fig. 7.

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PRESS FOR FORMING INTERNAL GROOVES IN PAPER VESSELS.

No. 857,123.

Specification of Letters Patent.

Patented June 18, 1907.

Application filed April 28, 1905. Serial No. 257,854.

To all whom it may concern:

Be it known that I, ALBERT R. TIFFANY, a citizen of the United States, residing in Dayton, county of Montgomery, and State of Ohio, have invented a certain new and useful Improvement in Presses for Forming Internal Grooves in Paper Vessels, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My improvements relate to machines for impressing grooves upon the inner surface of paper buckets, and the like, in order to form a seat for the lids or covers thereof, and the improvements consist of that certain novel construction and arrangements of parts to be hereinafter particularly pointed out and claimed.

In the drawings, Figure 1 is a side elevation of my improved press. Fig. 2 is a central vertical section of the same. Fig. 3 is a detail side elevation of the cam wheel for operating the press plunger. Fig. 4 is a plan of the machine. Fig. 5 is a plan view of the mold. Fig. 6 is a detail cross section of the plunger taken on the lines $y-y$ of Fig. 2. Fig. 7 is a sectional elevation taken on the lines $x-x$ of Fig. 6.

1 is a table provided with four legs 2, 2 to form a substantial framework for the operating parts, and also provided with the vertical standard 3 for supporting the plunger mechanism.

4 is the driving shaft of the machine, mounted in suitable bearings in the rear of the frame carrying a driving pulley 5 and the pinion 6. This pinion meshes with the gear 7 mounted on the shaft 8, also mounted in suitable bearings on the rear of the frame above and parallel to the driving shaft 4. Upon this shaft 8 are mounted the three cam wheels 9, 10 and 11 for operating the various parts of the press.

12 is a plunger rod carrying the block 13, and has a suitable bearing for vertical movement in the collar 14 on the front of the standard 3. The plunger 12 is coupled by the link 15 with the lever 16, pivoted at 17 in the upper end of the standard 3. The opposite end of this lever 16 is coupled to the connecting rod 18, which is slotted at its lower end 19 to embrace the shaft 8 and carries the

roller 20, which engages the cam groove 21 in the cam wheel 9, so that with the rotation of the cam wheel the lever 16 will be rocked to raise and lower the plunger 12, and its block 13. The block 13 when at its lowest point fits within the mold 22, mounted on and fixed to the table 1. The mold 22 and the plunger block 13 are of a shape to conform with the shape of the paper vessel, within which the grooves are to be formed. In the construction illustrated, this form is the ordinary rectangular paper pail. For cylindrical vessels, or other shapes, the mold and die are correspondingly changed.

Hinged upon the table at 23, 23 are four external die plates 24, 24, each plate being provided with the internal horizontal flange 25, 25 grooved to correspond with the number of grooves to be formed in the paper vessel. On the outer face of each of these hinged die plates a raised contact surface 26 is formed in a position to be engaged by the beveled inwardly projecting lips 27, 27 on the standard, or frame, 28. This frame 28 is mounted on the pins 29, 29, which pins pass down through bearing sleeves 30 in the table top, and are mounted on the cross head 31; which is connected by the link 32 with the one end of the lever 33 pivoted at about its middle point to the depending arm 34, secured to the table. The outer end of this lever 32 carries a roller 35, which engages the cam groove 36 in the face of the cam wheel 10. This cam wheel is so timed that at the proper moment the lever 33 may be rocked to raise the frame 28 to oscillate inward, or close up, the hinged die plates 24, 24. The die plates 24 carry the horizontal pins 37, 37, which are engaged by the depending pins 38, 38 on the frame 28, so that when the frame 28 is lowered the pins 38 will contact with the pins 37 and open up the die plates 24. Loosely mounted on the plunger 12 is the flanged sleeve 39.

40, 40 are die plates mounted to slide horizontally on the upper surface of the block 13, and guided in their movement by lugs 41 on the lower surface of the plates, which engage in slots 42 in the upper surface in the block 13. These die plates 40 are connected by links 43 with the flange of the collar 39, so that upon the oscillation of the collar 39 the four die plates 40 will be dis-

tended or retracted. These die plates 40 are formed with grooves 44 to correspond with the grooves to be formed in the paper vessel.

The sleeve 39 is provided with an arm 45, having the slot 46 at its outer end, which slot is engaged by the rod 47 secured on the horizontal shaft 48, mounted in bearings 49, 49 on the table, to slide endwise. 50 is a collar on this shaft 48, provided with a pin 51, which engages the slot 52 in the upper end of the lever 53, pivoted at 54 to the frame, and having slotted engagement at its lower end 55, with the connecting bar 56 having the slot 57 to embrace the shaft 8, and carrying at its outer end the roller 58, engaging the cam groove 59 in the cam wheel 11.

The press is operated as follows: The paper box in which the grooves are to be formed is placed on the block 13, this form block being of the proper size to fit the bucket. As it is usual in the construction of paper vessels of the kind to be treated to use adhesive material in securing together parts of the blank for the purpose of drying this material a gas flame or other heat supply may be applied to the lower mold 22 for properly drying the adhesive material. The machine being in the position shown in Fig. 1 the driving shaft is then set in motion which actuates the various cam wheels on the shaft 8. These are so timed that the first operation is to cause the plunger 12, and the form block 13 holding the paper vessel, to descend into the mold 22, and then simultaneously, with the raising of the frame 28, to close the external dies 24, 24, the arm 45 on the plunger rod is rocked to throw out the internal die plates 40. In order to permit the grooves formed by the die plates to fix themselves in the paper material, the die plates may be held for a moment, or two, by stopping the driving mechanism by a suitable clutch, but in many instances this may not be necessary, and as soon as the grooves have been formed, the continuation of the operation of the machine will withdraw the frame 28, and open up the external die plates at the same time that the internal plates are retracted by the oscillation of the arm 45, and then the form block 13 will rise to permit the operator to remove the paper vessel, which has been grooved and to substitute a new blank.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is:

1. In a press of the character described, the combination with a male and female die mold, of inner and outer die plates movably mounted on said molds respectively, with means for expanding the inner and contracting the outer die plates when the die molds are operated, substantially as described.

2. In a press of the character described, the combination with a movable male and a fixed female die mold, of inner and outer die plates movably mounted on said molds respectively, with means for expanding the inner and contracting the outer die plates when the die molds are operated, as described.

3. In a press of the character described, the combination with a male and female die mold, of inner and outer die plates secured to said molds respectively, with means for expanding the inner die plates, and an integral frame inclosing the outer die plates, with means for actuating said frame to contract the outer die plates, as described.

4. In a press of the character described, the combination with a male and female die mold, of inner die plates mounted on said male die mold, oscillating collar on said mold with links coupling said collar and die plates, whereby the oscillation of the collar will contract and expand said plates, an integral frame inclosing the outer die plates, with means for actuating said frame to contract the outer die plates, substantially as described.

5. In a press of the character described, the combination with a shaft, and a series of cams thereon, of a movable male die mold, a fixed female die mold, laterally movable inner and outer die plates mounted on said movable and fixed die molds respectively, an integral frame surrounding the outer die plates, and connecting mechanism intermediate said cams, and the movable male mold, the inner die plates and the integral frame, for actuating said parts in succession, substantially as described.

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Witnesses:

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